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CLAIMS

What is claimed is:

1. A method for frequency conversion of a non-polarized optical light beam, comprising:
  - splitting a beam into two orthogonally polarized beams;
  - forming said polarized beams and rotating their polarizations; and
  - pumping an optical frequency converter with said polarized beams.
2. A method for frequency conversion of a non-polarized optical light beam, comprising jointly pumping one, type II phase matched frequency conversion process with two orthogonally polarized beams.
3. The method according to claim 1 or claim 2, further comprising placing an optical isolator in the beam path such as to prevent reflection-returned light from entering into the pump laser.
4. The method according to claim 1 or claim 2, wherein both beams are focused together into one spot within the frequency converter so as to generate one converted beam.
5. The method according to claim 1 or claim 2, wherein the frequency converter comprises a non-linear crystal placed within a cavity, and the common cavity is pumped by said polarized beams.
6. The method according to claim 1 or claim 2, further comprising combining the two generated polarized beams into one beam by means of a polarization beam combiner.
7. Apparatus for frequency conversion of a non-polarized optical light beam, comprising:
  - a beam splitter adapted to split a beam into two, orthogonally polarized beams;
  - beam forming optics adapted to form said polarized beams and rotate their polarizations; and
  - an optical frequency converter pumped with said polarized beams.
8. Apparatus according to claim 7, wherein said beam splitter comprises a beam displacer polarizer.
9. Apparatus according to claim 7, wherein said beam forming optics comprises a half-lambda retarding wave plate, placed into one beam path such as to rotate its polarization by 90°.